

REMARKS

In view of the above amendment, applicant believes the pending application is in condition for allowance.

The Office Action and prior art relied upon have been carefully considered. In an effort to expedite the prosecution independent claims 1 and 10 have been rewritten as respective new claims 17 and 18 which more clearly represent the corresponding method and apparatus claims representing the invention. Claim 17 includes the subject matter of claims 1, 2 and 3 while claim 18 includes the subject matter of claims 10, 11 and 12. Therefore, dependent claims 2, 3 and 11, 12 have been cancelled.

Claims 1-16 were rejected under 35 USC 103(a) as unpatentable over the admitted prior art (e.g. pages 2 and 3 of the specification) in view of Giraud (US 6,334,770) and Okamoto (US 4,480,992).

The present invention concerns a continuous furnace in which the products being heated are moving as indicated on page 8, lines 1-8 of the specification.

The invention has as a principal objective the reduction of the influence of the hot point of a flame and to obtain better temperature homogeneity of the walls of the furnace and of the products as explained on page 1, lines 30-38 and page 2, lines 1-8 of the specification.

The invention also seeks to reduce variations of pressure in the interior of the furnace to better control circulation of flue gases in the furnace as well as reducing the variations of pressure in the circuits that feed the burners with fuel and oxidizer (see page 5, lines 37-39 and page 6, lines 1,2 of the description).

According to the invention:

- The lateral burners of the reheating furnace are spread flame burners (B1- B4);

- The burners operate at a regime near or at the maximum regime;
- The order of igniting the burners is chosen for promoting the swirling and circulation of the flue gases; and
- Each of the lateral walls of the furnace comprises at least two burners and an order of igniting that is chosen in a manner reducing variations of pressure in the furnace and in the feed circuits for the fuel and oxidizer.

As explained in the specification on page 9, lines 9-38 and page 10, lines 1-36 the operation chosen for the spread flame burners at or near the maximum regime correspond to the curve C3 of Fig. 3 for thermal distribution.

The effect of the flame hot point is found to be reduced.

The homogeneity of the temperature in the furnace is assured and chosen by choosing the igniting order of the burners in a manner reducing variations of pressure in the furnace and in the circuits for feeding fuel and oxidizer to the burners (see the description on page 13 lines 28-35).

Regarding the references cited, Okamoto concerns a furnace that treats products on a “batch” basis by providing products statically and not by moving them in the furnace. See column 1, lines 11-28. The reference provides a heating method for achieving a uniform temperature distribution in the furnace as described in column 1, lines 45-59.

Okamoto does not address the problem of reducing a burner flame hot point but rather a reduction of the hot points occurring in the static products. See column 1, lines 24-28.

The patent to Giraud teaches the use of spread flame lateral burners for reducing the differences of temperature in treated products that must be reheated. See column 1, lines 5-11. Thus, Giraud like Okamoto is concerned with rendering a homogenous temperature profile in products as opposed to reducing flame hot points.

If one of ordinary skill in the art applied to the Giraud burners a computer command as taught by Okamoto, one would wind up with a command to render a homogenous temperature profile in treated products without neither directly considering the problem of reducing flame hot points nor reducing the pressure variations in the furnace and in the burner feed circuits for fuel and oxidizer.

According to the invention the spread flame burners B1 and B4 are controlled to operate at or near a maximum regimen, and to exploit to the utmost the properties of a spread flame burner illustrated in Fig. 3 by its placement in the best conditions corresponding to the curve C3.

By choosing the order of igniting the burners as well as choosing the regime of operation of the burners, according to the invention:

- The mixing and circulation of flue gases are favored while reducing the flame hot point, and consequently obtaining better temperature homogeneity in the walls and in the treated products; and
- Pressure variations are reduced in the furnace and in the feed circuits for fuel and oxidizer.

As will be appreciated application of the present invention in a furnace facility will improve results of the products being treated as compared to the prior art.

In view of the above, consideration and allowance are, therefore, respectfully solicited.

In the event the Examiner believes an interview might serve to advance the prosecution of this application in any way, the undersigned attorney is available at the telephone number noted below.

The Director is hereby authorized to charge any fees, or credit any overpayment, associated with this communication, including any extension fees, to CBLH Deposit Account No. 22-0185, under Order No. 21029-00304-US1 from which the undersigned is authorized to draw.

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Respectfully submitted,

Electronic signature: /Morris Liss/
Morris Liss

Registration No.: 24,510
CONNOLLY BOVE LODGE & HUTZ LLP
1875 Eye Street, NW
Suite 1100
Washington, DC 20006
(202) 331-7111
(202) 293-6229 (Fax)
Attorney for Applicant